

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) An apparatus comprising:

a pulsed laser that includes a fiber optical gain medium and having a pulse repetition rate of more than 50000 pulses per second and a per-pulse length of less than one picosecond; and

an optical path including a scanning head operably coupled to receive laser light from the pulsed laser and operable to scan an output light pattern suitable to sculpt tissue for a surgical procedure using at least 100000 pulses in less than ten seconds; and

a precompressor that creates a negative dispersion in each pulse that compensates for a dispersion of the optical path after the precompressor.

2. (Original) The apparatus of claim 1, wherein the surgical procedure is a complete surface cut of an ophthalmologic surgical procedure, the cut defining a surface, at least a portion of which is within a corneal stroma.

3. (Original) The apparatus of claim 1, wherein the surgical procedure uses at least 200000 pulses in less than five seconds.

4. (Original) The apparatus of claim 1, wherein the surgical procedure uses at least 200000 pulses in less than two seconds.

5. (Original) The apparatus of claim 1, wherein the surgical procedure forms a first cut that defines a posterior surface of a lenticule within a corneal stroma, a second cut that defines a lenticule anterior surface of the lenticule, and a slit cut that extends to the cornea surface, wherein the three cuts are completed within five seconds.

6. (Original) The apparatus of claim 5, wherein the slit cut either forms or subtends an arc of less than 180 degrees measured from the lenticule's center.

7. (Original) The apparatus of claim 1, wherein the surgical procedure forms a first cut that defines a posterior surface of a corneal flap that can be folded back to expose a stroma surface to allow a conventional LASIK Operation on the exposed stroma surface, wherein the first cut is completed within two seconds.

8. (Cancelled)

9. (Original) The apparatus of claim 1, wherein the scanning head focuses at least 100000 pulses per second and the per-pulse length is less than 500 femtoseconds.

10. (Original) The apparatus of claim 1, wherein the scanning head focuses at least about 200000 pulses per second and the per-pulse length is less than 400 femtoseconds.

11. (Original) A method comprising:

generating a stream of pulses having a pulse repetition rate of at least about 50000 pulses per second and a per-pulse length of less than one picosecond using an optical fiber gain medium; and

scanning and focusing the stream to an output light pattern suitable to sculpt tissue for a surgical procedure using at least 100000 pulses in less than ten seconds.

12. (Original) The method of claim 11, wherein the surgical procedure is a complete surface cut of an ophthalmologic surgical procedure, the cut defining a surface, at least a portion of which is within a corneal stroma.

13. (Original) The method of claim 11, wherein the scanning and focusing uses at least 200000 pulses to form at least one cut that is completed in less than five seconds.

14. (Original) The method of claim 11, wherein the scanning and focusing uses at least 200000 pulses to form at least one cut that is completed in less than two seconds.

15. (Original) The method of claim 11, wherein the scanning and focusing forms a first cut that defines a posterior surface of a lenticule within a corneal stroma, a second cut that defines an lenticule anterior surface of the lenticule, and a slit cut that extends to the cornea surface, wherein the three cuts are completed within five seconds.

16. (Original) The method of claim 15, wherein the slit cut either forms or subtends an arc of less than 180 degrees measured from the lenticule's center.

17. (Original) The method of claim 11, wherein the surgical procedure forms a first cut that defines a posterior surface of a corneal flap that can be folded back to expose a stroma surface to allow a LASIK operation on the exposed stroma surface, wherein the first cut is completed within two seconds.
18. (Original) The method of claim 11, further comprising precompressing each pulse to create a negative dispersion that compensates for a dispersion of an optical path after the precompressor.
19. (Original) The method of claim 11, wherein the scanning and focusing focuses at least 100000 pulses per second and the per-pulse length is less than 500 femtoseconds.
20. (Original) The method of claim 11, wherein the scanning and focusing focuses at least about 200000 pulses per second and the per-pulse length is less than 400 femtoseconds.
21. (Currently Amended) An apparatus comprising:
optical fiber means for generating a stream of pulses having a pulse repetition rate of at least about 50000 pulses per second and a per-pulse length of less than one picosecond;
and
means for scanning and focusing the stream to an Output light pattern suitable to sculpt tissue for a surgical procedure using at least 100000 pulses in less than ten seconds;
and
means for precompressing each pulse to create a negative dispersion that compensates for a dispersion of an optical path after the precompressor.
22. (Original) The apparatus of claim 21, wherein the means for scanning and focusing is operable to form a complete cut for an ophthalmologic surgical procedure, the cut defining a surface, at least a portion of which is within a corneal stroma.
23. (Original) The apparatus of claim 21, wherein the scanning and focusing uses at least 200000 pulses to form at least one cut that is completed in less than five seconds.
24. (Original) The apparatus of claim 21, wherein the scanning and focusing uses at least 200000 pulses to form at least one cut that is completed in less than two seconds.

25. (Original) The apparatus of claim 21, wherein the means for scanning and focusing is operable to form a first cut that defines a posterior surface of a lenticule within a corneal stroma, a second cut that defines an lenticule anterior surface of the lenticule, and a slit cut that extends to the cornea surface, wherein the three cuts are completed within five seconds.
26. (Original) The apparatus of claim 25, wherein the slit cut either forms or subtends an arc of less than 180 degrees measured from the lenticule's center.
27. (Original) The apparatus of claim 21, wherein the surgical procedure forms a first cut that defines a posterior surface of a corneal flap that can be folded back to expose a stroma surface to allow a LASIK operation on the exposed stroma surface, wherein the first cut is completed within two seconds.
28. (Cancelled)
29. (Original) The apparatus of claim 21, wherein the means for scanning and focusing focuses at least 100000 pulses per second and the per-pulse length is less than 500 femtoseconds.
30. (Original) The apparatus of claim 21, wherein the means for scanning and focusing focuses at least about 200000 pulses per second and the per-pulse length is less than 400 femtoseconds.
31. (Currently Amended) An apparatus comprising:
a pulse laser comprising a fiber optical amplifier and having a per-pulse length of less than one picosecond; and
an optical path including a scanning head operably coupled to receive laser light from the pulsed laser and operable to scan an output light pattern suitable to sculpt tissue for a surgical procedure; and
a precompressor that creates a negative dispersion in each pulse that compensates for a dispersion of the optical path after the precompressor.

32. (Original) The apparatus of claim 31, wherein the surgical procedure is a complete surface cut of an ophthalmologic surgical procedure, the cut defining a surface, at least a portion of which is within a corneal stroma.
33. (Original) The apparatus of claim 31, wherein the surgical procedure uses at least 200000 pulses in less than five seconds.
34. (Original) The apparatus of claim 31, wherein the surgical procedure uses at least 200000 pulses in less than two seconds.
35. (Original) The apparatus of claim 31, wherein the surgical procedure forms a first cut that defines a posterior surface of a lenticule within a corneal stroma, a second cut that defines a lenticule anterior surface of the lenticule, and a slit cut that extends to the cornea surface, wherein the three cuts are completed within five seconds.
36. (Original) The apparatus of claim 35, wherein the slit cut either forms or subtends an arc of less than 180 degrees measured from the lenticule's center.
37. (Original) The apparatus of claim 31, wherein the surgical procedure forms a first cut that defines a posterior surface of a corneal flap that can be folded back to expose a stroma surface to allow a conventional LASIK operation on the exposed stroma surface, wherein the first cut is completer within two seconds.
38. (Cancelled)
39. (Original) The apparatus of claim 31, wherein the scanning head focuses at least 1000000 pulses per second and the per-pulse length is less than 500 femtoseconds.
40. (Original) The apparatus of claim 31, wherein the scanning head focuses at least about 200000 pulses per second and the per-pulse length is less than 400 femtoseconds.